

# VANISHING VISCOSITY IN MEAN-FIELD OPTIMAL CONTROL

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We show the existence of Lipschitz-in-space optimal controls for a class of mean-field control problems with dynamics given by a non-local continuity equation. The proof relies on a vanishing viscosity method: we prove the convergence of the same problem where a diffusion term is added, with a small viscosity parameter.

By using stochastic optimal control, we first show the existence of a sequence of optimal controls for the problem with diffusion. We then build the optimizer of the original problem by letting the viscosity parameter go to zero.

This is a joint work with Francesco Rossi (University of Padova).

## REFERENCES

- [1] G. CIAMPA, F. ROSSI, *Vanishing viscosity for linear-quadratic mean-field control problems*, IEEE 60th Annual Conference on Decision and Control (CDC), pp. 185–190, 2021.
- [2] G. CIAMPA, F. ROSSI, *Vanishing viscosity in mean-field optimal control*, 2021. Available at <https://arxiv.org/abs/2111.13015>.